Step 8
Test for Logic and Consistency

Learning objectives

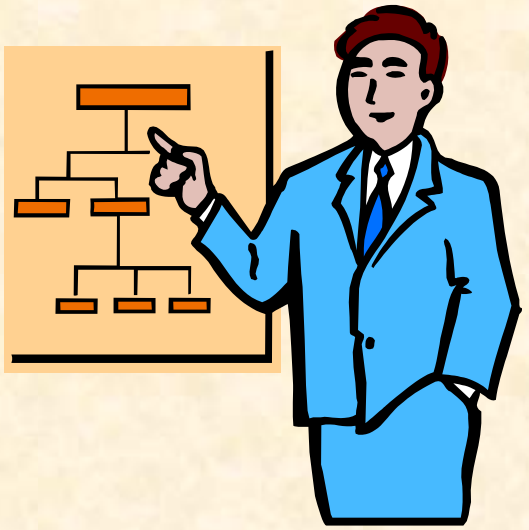
- *Explain the importance of evaluating the effectiveness of selected species for representing a broader suite of species*
- *Describe strategies for evaluating effectiveness of a surrogate species approach*
- *Discuss why it is important to ensure consistency across landscapes*

Why evaluate effectiveness?

- *Key reminder: selection of surrogate species is part of the biological planning process that will aid in decisions for conservation actions*
- *Key assumption: surrogate species or groups are proxies for management of a larger suite of species*
- Surrogate approaches in the past have had mixed results; following selection of surrogate species it is important to rethink/test if they are appropriate to achieve your objectives

Options to test logic of selection

- Document the linkages
  - Descriptive text
  - Conceptual diagrams
    - Stressors, how surrogate species and the others relate to habitat, expected biological outcomes, etc.
- Expert review
- Examine the geographic overlap
- Simulation modeling



Consistency

- To achieve range-wide biological outcomes we must be consistent in selection of species and their objectives across the landscape.

Cautions

- Expert review and simulation modeling are not a replacement for monitoring
- This step is to evaluate the logic of the selected surrogate species, not the effectiveness of management

Step 9 Identify Knowledge Gaps and Uncertainties

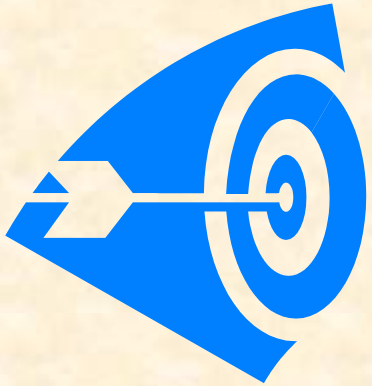
Learning objectives

- *Discuss reasons why it is important to identify knowledge gaps and uncertainties throughout the process.*
- *Explain how you can use this information to identify future needs for research and monitoring that will improve our ability to meet our objectives.*
- *Describe how uncertainty and knowledge gaps might influence selection of species.*

Why identify knowledge gaps and uncertainties?

- *Key reminder: management decisions and actions will be made despite uncertainty.*

- Clearly documenting knowledge gaps and uncertainties allows us to target resources to the most pressing needs.



Gaps and uncertainties drive research and monitoring

- Throughout the process of surrogate species selection and establishing biological outcomes you will document assumptions
  - Knowledge gaps
  - Uncertainties

- Not all knowledge gaps and uncertainties are equal
  - What is the strength (i.e., how uncertain)?
  - What is the gap/uncertainties importance in achieving the objective?

Caution

- Areas of high uncertainty may require immediate research or a cautionary approach to selection of species

- As the complexity of problems grow it is important to make decisions in a structured and transparent way

Step 10

Setting the Stage for Monitoring Effectiveness of the Surrogate Species Approach

Learning objectives

- *Describe how you would determine the effectiveness of a surrogate species approach (i.e., test the assumptions made when selecting surrogate species).*
- *Identify what information you would need to determine effectiveness.*
- *Discuss how effectiveness of this approach could be improved by iteratively repeating the steps in the process with lessons learned from this evaluation.*
- *Consider what biological outcomes would need to be measured to demonstrate effectiveness of a surrogate species approach.*

Testing surrogate species approach effectiveness

- *Key reminder: selecting surrogate species is of the pieces of the biological planning process of SHC*
- Related to step 8, but involves empirical testing of how well selected surrogate species represent other species
- THIS STEP IS NOT TO TEST MANAGEMENT EFFECTIVENESS!
- Tests the conceptual “linkage” developed between the surrogate species and the species it represents

Designing monitoring to test effectiveness

- Protocols should be developed to identify if needs of surrogate species = needs of species it is meant to represent
  - Requires development of the expected biological outcomes for both the surrogate and the other priority species
  - Should be attempted in areas with great uncertainty and risk

Considerations

- What to biological outcomes to measure?
- What are the potential sources of information? Can models be used?
- Is there additional research is needed to test the surrogate approach?
- Should all species be monitored with equal rigor to assess effectiveness?
- After acquiring information needed to test the relationships you may need to go back to select new or different surrogates until you have representation for all priority species.

Steps are not Linear

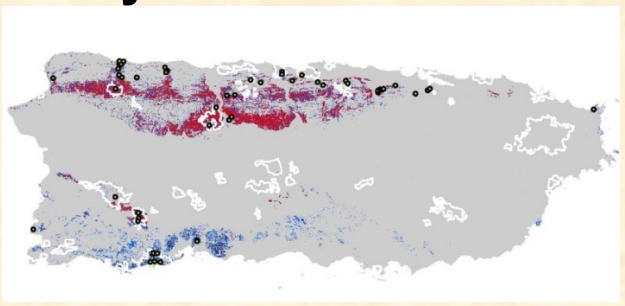
Example of Steps 8 to 10

Time to discuss!

Step 8:
Test for logic and consistency

- Surrogate species effectiveness evaluation
  - Initial assessment to identify:
    - Management scenarios
    - Possible outcomes
    - Relationship with other species (Life History, Habitat Type)
    - Management objectives

    Example: Habitat Predictability and Suitability Models (*Ottoschulzia rhodoxylon*)



Step 9:
Identify knowledge gaps and uncertainties

- Uncertainties detection to identify priorities for future research such as monitoring programs.
  - **Lack of Monitoring Approach (Habitat Restoration Practices)**
  - **Status and Population Trends of Listed Species**
  - **Lack of Life History information on represented spp.**

Step 10:
Monitor the effectiveness of the approach

- Evaluate the assumptions of the surrogate process
- Test how well the approach meets the management objectives.

Example: Elfin-wood Warbler Monitoring Initiative (e.g., short-term -vs- long-term, multi-species or single species)